

### **LISTING OF THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (previously presented) An encoder having an input and an output, wherein the input receives a signal, wherein the encoder calculates an entropy value associated with at least a portion of the signal and encodes the signal to insert an ancillary code representing the calculated entropy value to preserve an entropy of the encoded portion of the signal, and wherein the output carries the encoded signal, which includes the ancillary code.

2. (original) The encoder of claim 1 wherein the signal is an audio signal.

3. (previously presented) The encoder of claim 1 wherein the encoder calculates the entropy value based on a summation of probabilities.

4. (previously presented) The encoder of claim 1 wherein the ancillary code is comprised of bits, and wherein each bit is coded by amplitude modulating the signal at a pair of frequencies.

5. (canceled)

6. (previously presented) An encoder having an input and an output, wherein the input receives a signal, wherein the encoder calculates an entropy value associated with at least a portion of the signal and encodes the signal to include the calculated entropy value, wherein the entropy value is comprised of bits and each bit is coded to preserve an entropy of the encoded portion of the signal, and wherein the output carries the encoded signal, which includes the calculated entropy value.

7. (previously presented) The encoder of claim 1 wherein the ancillary code is comprised of bits, and wherein each bit is coded by swapping a spectral amplitude of at least two frequencies in the signal.

8. (previously presented) The encoder of claim 1 wherein the signal is encoded to insert the ancillary code using frequency hopping.
9. (previously presented) The encoder of claim 1 wherein the signal is encoded to insert the ancillary code using spectral modulation.
10. (previously presented) The encoder of claim 1 wherein the entropy value is calculated using histograms.
11. (previously presented) A decoder having an input and an output, wherein the input receives a signal, which includes an ancillary code representing an entropy value encoded in the signal to preserve an entropy of the signal, wherein the decoder decodes the signal to extract the ancillary code to read the entropy value from the signal, and wherein the output carries a signal based upon the entropy value.
12. (original) The decoder of claim 11 wherein the signal is an audio signal.
13. (previously presented) The encoder of claim 11 wherein the entropy value represents an entropy having a value determined based on a summation of probabilities.
14. (previously presented) The decoder of claim 11 wherein the signal is decoded by amplitude demodulating pairs of frequencies.
15. (previously presented) The decoder of claim 11 wherein the signal is decoded by determining swapping events, and wherein the swapping events correspond to swapping of a spectral amplitude of at least two frequencies in the signal.
16. (previously presented) The decoder of claim 11 wherein the signal is decoded using frequency hopping.

17. (previously presented) The decoder of claim 11 wherein the signal is decoded using spectral demodulation.

18. (currently amended) A decoder having an input and an output, wherein the input receives a signal, which includes an encoded entropy value, wherein the decoder decodes the signal to read the encoded entropy value from the signal, and wherein the output carries a signal based upon the encoded entropy value, and wherein the decoder is configured to ~~determine~~ calculate an entropy of the signal and compare the ~~determined~~ calculated entropy to the encoded entropy value.

19. (previously presented) The decoder of claim 18 wherein the decoder is configured to detect at least one of a compression operation or a decompression operation based on the comparison.

20. (previously presented) The decoder of claim 18 wherein the decoder is configured to prevent use of a device based on the comparison.

21. (currently amended) The decoder of claim 18 wherein the decoder is configured to ~~determine~~ calculate the entropy of the signal based on a sum of probabilities.

22. (previously presented) A method of encoding a signal comprising:  
calculating an entropy value associated with at least a portion of the signal; and  
encoding the signal to insert an ancillary code representing the calculated entropy value and to preserve an entropy of the encoded signal.

23. (original) The method of claim 22 wherein the signal is an audio signal.

24. (previously presented) The method of claim 22 wherein calculating the entropy value includes calculating the entropy value based on a sum of probabilities.

25. (previously presented) The method of claim 22 wherein the ancillary code is comprised of bits, and wherein encoding the signal comprises coding each of the bits by amplitude modulating the signal at a pair of frequencies.

26. (canceled)

27. (previously presented) The method of claim 22 wherein the ancillary code is comprised of bits.

28. (previously presented) The method of claim 22 wherein the ancillary code is comprised of bits, and wherein encoding the signal comprises coding each of the bits by swapping a spectral amplitude of at least two frequencies in the signal.

29. (previously presented) The method of claim 22 wherein encoding the signal comprises coding the signal with the ancillary code using frequency hopping.

30. (previously presented) The method of claim 22 wherein encoding the signal comprises coding the signal with the ancillary code using spectral modulation.

31. (previously presented) The method of claim 22 wherein encoding the signal comprises coding the signal with the ancillary code using histograms.

32. (currently amended) A method of decoding a signal, which includes a first calculated entropy value, the method comprising:

decoding the signal to extract an ancillary code representing the first calculated entropy value from the signal;

~~determining an~~ calculating a second entropy of the signal;

comparing the second calculated entropy of the signal to the first calculated entropy value; and

providing an output based on the comparison of the second calculated entropy of the signal to the first calculated entropy value.

33. (original) The method of claim 32 wherein the signal is an audio signal.
34. (currently amended) The method of claim 32 wherein the first calculated entropy value is based on a sum of probabilities.
35. (previously presented) The method of claim 32 wherein decoding the signal comprises decoding the signal by amplitude demodulating pairs of frequencies.
36. (previously presented) The method of claim 32 wherein decoding the signal comprises determining swapping events that correspond to swapping of a spectral amplitude of at least two frequencies in the signal.
37. (previously presented) The method of claim 32 wherein decoding the signal comprises using frequency hopping.
38. (previously presented) The method of claim 32 wherein decoding the signal comprises using spectral demodulation.
39. (canceled)
40. (previously presented) The method of claim 32 wherein the output prevents playing of the signal.
41. (previously presented) The method of claim 32 wherein the entropy of the signal is based on a sum of probabilities.

Claims 42-54 (canceled)

55. (new) The encoder of claim 1, wherein the encoder preserves the entropy of the encoded portion of the signal in response to at least one of signal compression or decompression.
56. (new) The encoder of claim 6, wherein the encoder preserves the entropy of the encoded portion of the signal in response to at least one of signal compression or decompression.

57. (new) The decoder of claim 11, wherein the entropy value encoded in the signal preserves the entropy of the signal in response to at least one of signal compression or decompression.

58. (new) The method of claim 22, further comprising encoding the signal to preserve the entropy of the encoded signal in response to at least one of signal compression or decompression.